

Exponential Equation Notes

finding the constant multiplier

increasing: $1 + \%$ (decimal)

ex 37% increase
 $1 + 0.37 = 1.37$

decreasing: $1 - \%$ (decimal)

ex 23% decrease
 $1 - 0.23 = 0.77$

recursive routine \rightarrow equation

SN $\rightarrow a$
 rule (multiplier) $\rightarrow b$

$$y = a(b)^x$$

exponential equation

growth: $b > 1$
 decay: b btwn $0 \leq 1$

examples

1. SN: 100, rule: 1.05
 $\rightarrow y = 100(1.05)^x$

2. start with 400 bugs, 15% increase
 $\rightarrow y = 400(1.15)^x$

3. start with 700, decreasing by 25%
 $\rightarrow y = 700(0.75)^x$

4. SN: 250, rule: 0.7
 $\rightarrow y = 250(0.7)^x$

from charts

- * a value when $x=0$
- * $\frac{\text{term 2}}{\text{term 1}} = b$ (must be in order)

ex

x	y
0	4
1	2
2	1/2
3	1/4

$y = 4(\frac{1}{2})^x$
 $\rightarrow 50\%$
 $\frac{2}{4} = \frac{1}{2} = b$ decay

ex 2

x	y
0	16
1	4
3	1/4
4	1/16

$y = 16(\frac{1}{4})^x$
 $\rightarrow 75\%$ decay
 $\frac{1/16}{1/4} = \frac{1}{4}$